
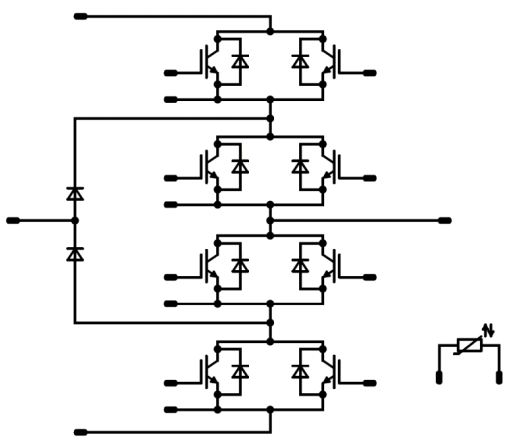




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<i>flow</i> NPC 1	650 V / 150 A
<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;">Features</p> <ul style="list-style-type: none"> Three-level high efficient topology Latest chip generation Low inductive package </div> <div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;">Target applications</p> <ul style="list-style-type: none"> Solar </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;">Types</p> <ul style="list-style-type: none"> 10-FY07NIA150S5-M516F58 </div>	<div style="border: 1px solid black; padding: 5px; margin-bottom: 5px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;"><i>flow</i> 1 12mm housing</p>  </div> <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #cccccc; margin: 0;">Schematic</p>  </div>

Maximum Ratings

$T_j = 25\text{ °C}$, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
Buck Switch				
Collector-emitter voltage	V_{CES}		650	V
Collector current	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	101	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	450	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	142	W
Gate-emitter voltage	V_{GES}		±20	V
Maximum junction temperature	T_{jmax}		175	°C



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Maximum Ratings

$T_j = 25\text{ °C}$, unless otherwise specified

Parameter	Symbol	Condition	Value	Unit
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Buck Diode

Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	86	A
Repetitive peak forward current	I_{FRM}		300	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	111	W
Maximum Junction Temperature	T_{jmax}		175	°C

Boost Switch

Collector-emitter voltage	V_{CES}		650	V
Collector current	I_C	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	149	A
Repetitive peak collector current	I_{CRM}	t_p limited by T_{jmax}	450	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_s = 80\text{ °C}$	164	W
Gate-emitter voltage	V_{GES}		±20	V
Maximum Junction Temperature	T_{jmax}		175	°C

Boost Diode\Boost Sw. Protection Diode

Peak Repetitive Reverse Voltage	V_{RRM}		650	V
Continuous (direct) forward current	I_F	$T_j = T_{jmax}$ $T_h = 80\text{ °C}$	121	A
Repetitive peak forward current	I_{FRM}		200	A
Total power dissipation	P_{tot}	$T_j = T_{jmax}$ $T_h = 80\text{ °C}$	203	W
Maximum Junction Temperature	T_{jmax}		175	°C

Module Properties

Thermal Properties

Storage temperature	T_{stg}		-40...+125	°C
Operation temperature under switching condition	T_{jop}		-40...($T_{jmax} - 25$)	°C

Isolation Properties

Isolation voltage	V_{isol}	DC Test Voltage $t_p = 2\text{ s}$	4000	V
Creepage distance			min. 12,7	mm
Clearance			8,07	mm
Comparative Tracking Index	CTI		> 200	



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Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
		V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_D [A]	T_j [°C]	Min	Typ	Max	

Buck Switch

Static

Parameter	Symbol	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_D [A]	T_j [°C]	Min	Typ	Max	Unit	
Gate-emitter threshold voltage	$V_{GE(th)}$		$V_{GE} = V_{CE}$			0,0015	25	3,2	4	4,8	V
Collector-emitter saturation voltage	V_{CEsat}			15	150	25		1,42	1,75		V
Collector-emitter cut-off current	I_{CES}			0	650	25			100		μA
Gate-emitter leakage current	I_{GES}			20	0	25			200		nA
Internal gate resistance	r_g							none			Ω
Input capacitance	C_{ies}							9000			pF
Reverse transfer capacitance	C_{res}	$f = 100$ KHz	0	25		25		34			
Gate charge	Q_g			15	520	150	25		328		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK						0,67			K/W
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Buck Diode

Static

Parameter	Symbol	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_D [A]	T_j [°C]	Min	Typ	Max	Unit	
Forward voltage	V_F				150	25		1,67	1,77		V
Reverse leakage current	I_r				650	25			7,6		μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK						0,86			K/W
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Characteristic Values

Parameter	Symbol	Conditions					Value			Unit
		V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	

Boost Switch

Static

Parameter	Symbol	Conditions	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	Unit
Gate-emitter threshold voltage	$V_{GE(th)}$	$V_{GE}=V_{CE}$				0,002	25	4,2	5	5,8	V
Collector-emitter saturation voltage	$V_{CE(sat)}$		15			150	25 150		1,10 1,09	1,45	V
Collector-emitter cut-off current	I_{CES}		0	650			25			80	μA
Gate-emitter leakage current	I_{GES}		20	0			25			200	nA
Internal gate resistance	r_g								none		Ω
Input capacitance	C_{ies}	$f = 1$ MHz	0	25			25		23250		pF
Reverse transfer capacitance	C_{res}										
Gate charge	Q_g		15	520	75	25			872		nC

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK							0,58		K/W
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Boost Diode\Boost Sw. Protection Diode

Static

Parameter	Symbol	Conditions	V_{GS} [V]	V_{GE} [V]	V_{DS} [V]	I_C [A]	T_j [°C]	Min	Typ	Max	Unit
Forward voltage	V_F					100	25 150		1,77 1,57	1,82	V
Reverse leakage current	I_r			650			25			1,2	μA

Thermal

Thermal resistance junction to sink	$R_{th(j-s)}$	phase-change material $\lambda = 3,4$ W/mK							0,47		K/W
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Thermistor

Rated resistance	R						25		21,5		kΩ
Deviation of R_{100}	$\Delta_{R/R}$	$R_{100} = 1486$ Ω					100	-4,5		+4,5	%
Power dissipation	P						25		210		mW
Power dissipation constant							25		3,5		mW/K
B-value	$B_{(25/50)}$						25		3884		K
B-value	$B_{(25/100)}$						25		3964		K
Vincotech NTC Reference										F	

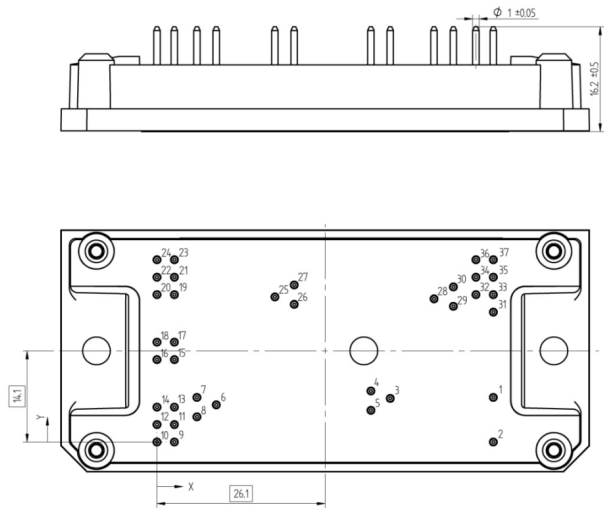


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Ordering Code & Marking						
Version			Ordering Code			
without thermal paste 12mm housing with solder pins			10-FY07NIA150S5-M516F58			
	Text	Name	Date code	UL & VIN	Lot	Serial
		NN-NNNNNNNNNNNN-TTTTTV	WWYY	UL VIN	LLLLL	SSSS
	Datamatrix	Type&Ver	Lot number	Serial	Date code	
		TTTTTTVV	LLLLL	SSSS	WWYY	

Pin table [mm]				Pin table [mm]			
Pin	X	Y	Function	Pin	X	Y	Function
1	52,2	6,9	NTC1	30	46	24	G2
2	52,2	0	NTC2	31	52,2	20,1	OUT
3	36,2	6,075	E3	32	49,5	22,8	OUT
4	33,2	7,9	G3	33	52,2	22,8	OUT
5	33,2	4,9	G3	34	49,5	25,5	OUT
6	9,2	5,75	E4	35	52,2	25,5	OUT
7	6,2	6,9	G4	36	49,5	28,2	OUT
8	6,2	3,9	G4	37	52,2	28,2	OUT
9	2,7	0	DC-				
10	0	0	DC-				
11	2,7	2,7	DC-				
12	0	2,7	DC-				
13	2,7	5,4	DC-				
14	0	5,4	DC-				
15	2,7	12,75	GND				
16	0	12,75	GND				
17	2,7	15,45	GND				
18	0	15,45	GND				
19	2,7	22,8	DC+				
20	0	22,8	DC+				
21	2,7	25,5	DC+				
22	0	25,5	DC+				
23	2,7	28,2	DC+				
24	0	28,2	DC+				
25	18,3	22,45	E1				
26	21,3	21,3	G1				
27	21,3	24,3	G1				
28	43	22,15	E2				
29	46	21	G2				

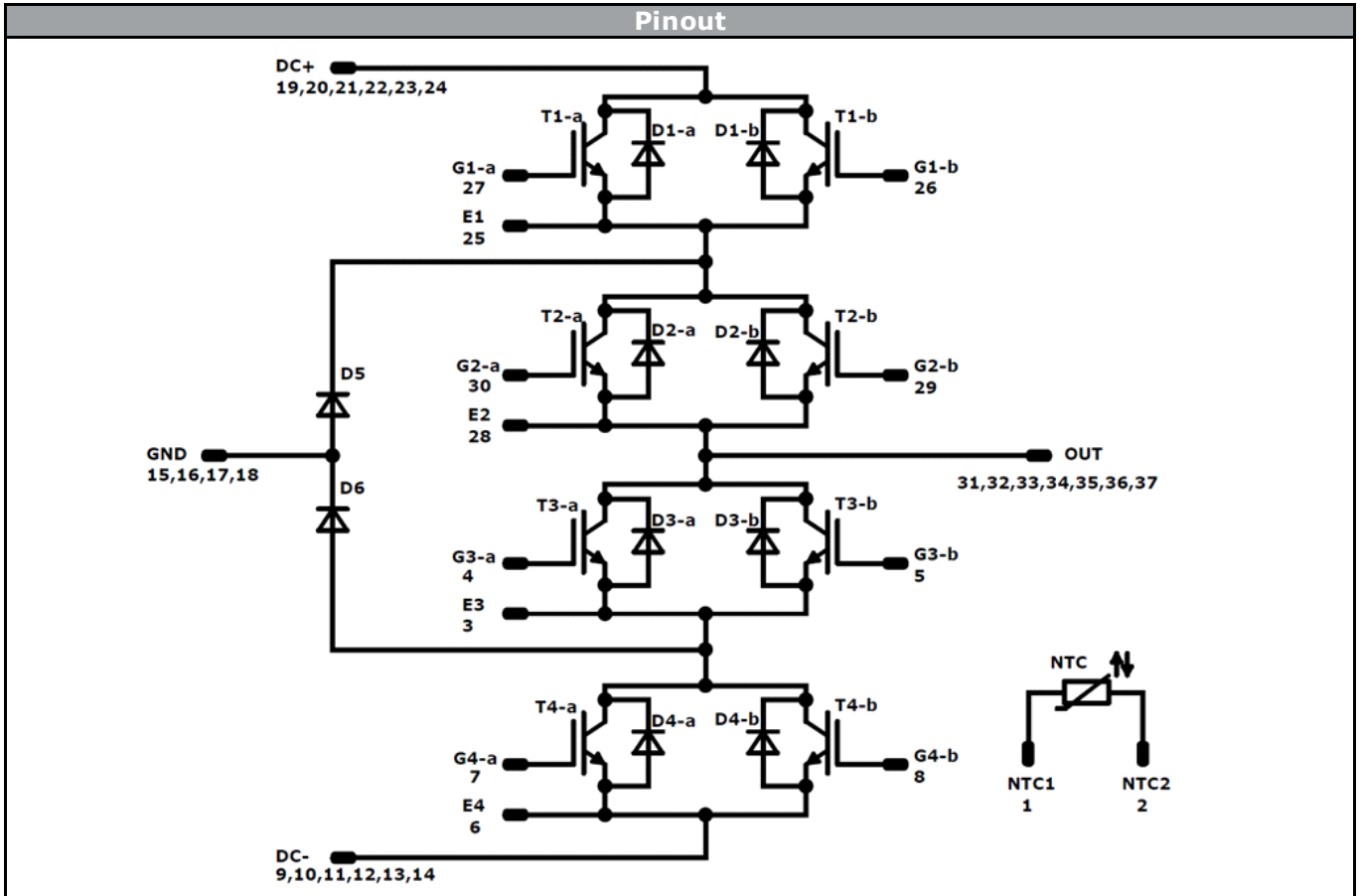
Outline



Tolerance of pinpositions: ±0,5mm at the end of pins
Dimension of coordinate axis is only offset without tolerance



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Identification					
ID	Component	Voltage	Current	Function	Comment
T1-a,T1-b,T4-a,T4-b	IGBT	650 V	150 A	Buck Switch	
D5,D6	FWD	650 V	150 A	Buck Diode	
T2-a,T2-b,T3-a,T3-b,	IGBT	650 V	150 A	Boost Switch	
D1-a,D1-b,D4-a,D4-b	FWD	650 V	100 A	Boost Diode	
D2-a,D2-b,D3-a,D3-b	FWD	650 V	100 A	Boost Sw. Protection Diode	
NTC	NTC			Thermistor	




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Packaging instruction			
Standard packaging quantity (SPQ)100	>SPQ	Standard	<SPQ Sample

Handling instruction
Handling instructions for <i>flow</i> 1 packages see vincotech.com website.

Package data
Package data for <i>flow</i> 1 packages see vincotech.com website.

UL recognition and file number
This device is certified according to UL 1557 standard, UL file number E192116. For more information see vincotech.com website. 

Document No.:	Date:	Modification:	Pages
10-FY07NIA150S5-M516F58-T1-14	04 Apr. 2016		

Product status definition		
Datasheet Status	Product Status	Definition
Target	Formative or In Design	This datasheet contains the design specifications for product development. Specifications may change in any manner without notice. The data contained is exclusively intended for technically trained staff.

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